

to the claims, Applicants will use standard practice: marking amended claims with the identifier “(amended)”, marking deletions with square brackets “[]” and changes with underlines. As with standard practice a clean copy of the amended claims (without deletions and underlined changes) will be provided.

In the specification:

In the Drawings:

Please substitute the attached Figures 1 through 14 which have been corrected to meet the objections of the Examiner and please add new drawings 15 – 18 as **proposed drawing corrections**. The sectional designations have been changed from “letters” to - - numbers - - the numbers refer to the section Figure number and this form of identification of sectionals should aid in the understanding of the invention. Cross sections A-A and B-B in Figure 1 have been changed to - - 15-15 - - and - - 15-15 - - respectively (as they are identical). Figure 6 has been corrected to clearly show that it is not identical to Figure 1 and the cross sections A-A and B-B have been changed to - - 16-16 and - - 15-15 - - respectively. New drawings Figures 15 and 16 have been added (as required); however, as will be explained in the support for amendments section of this response these drawings do NOT add new material. Original section line A-A (now 15-15) in Figure 1 and original section line A-A (now 16-16) in Figure 6 has been moved to properly reflect where the section should be taken to adequately describe the invention (namely through the upper eccentric sleeve in Figure 1 and through the upper concentric sleeve in Figure 6).

Figures 5A and 5B have been corrected to show the proper bias in the wellbore.

Figure 10 has been corrected to add the required crosshatching and the reference numbers have been corrected to remove duplication with the reference numbers in other drawings and/or they have been properly included in the specification. Reference numbers 1 and 3 have been removed as they should not have appeared in the drawing. Figure 11 has been corrected to remove duplication of reference numbers (“4” and “5”) with Figure 10 and are now shown as - -

29 - - and - - 30 - -. It was noticed that reference number "6" was also duplicative and that number has been changed to - - 3 - -.

Figures 17 and 18 have been added to more clearly point and distinguish the invention over the prior art and certainly over the prior art attributable to the inventors. These figures, as will be explained in the support for amendments section of this response, do NOT add new material.

These changes/corrections/additions add no new material; however, the corrected/added drawings will require a minor change in the description of the drawings. It is thought that the drawings will meet the standards of the Office (i.e., pass the draftsperson's review) and care has been taken to properly draft the drawings; however, these drawings are submitted as informal drawings for approval by the Examiner. Upon approval by the Examiner, a proper set of formal drawings will be submitted to Office.

In the Background of the Invention

It is believed that corrections are not needed.

In the Summary of the Invention

At page 3, line 26 (last line), please substitute - - eccentric sleeves - - for "eccentrically bored sleeves".

At page 4, lines 3, 6 and 7 , please substitute - - eccentric sleeve - - for "eccentrically bored sleeve".

At page 4, lines 4 and 5, please substitute - - concentric sleeve - - for "concentrically bored sleeve".

At page 4, line 8, please substitute - - eccentric sleeves - - for "eccentrically bored sleeves".

At page 9, line 8, please add - - or outer housing. - - following the words "outer eccentric sleeve."

In the Brief Description of the Drawings

At page 9, line 11, immediately following the phrase “. . . of the invention” please add the phrase - - utilizing eccentric sleeves - - .

At page 9, line 14, please change the word “left” to - - right - - .

At page 9, line 17-18, please change “Figure 4” to - - Figure 4A - - and please change “taken at A-A in Figure 2 and 3;” to - - taken at 4A-4A in Figures 2 and 3; - - .

At page 9 immediately following the above change please add:

- - Figure 4B is an elementary cross section of the tool of Figures 2 and 3 taken at 4B-4B in Figures 2 and 3; - - .

At page 10, line 4, immediately following the words “. . . of the present invention” please add the words - - utilizing an eccentric sleeve and a concentric sleeve - - .

At page 10, line 11, immediately before the word “signaling” please add the words - - fluid pressure - - .

At page 10, line 12, please change “. . . at A-A . . . ” to - - at 8A - 8A - - .

At page 10, lines 22 and 23 (last two lines) please cancel the description of Figure 12C.

At page 11, line 5, please change the word “comprising” to - - containing - - .

At page 11, line 5, immediately following the word “sensor” please add the following:

- - Figure 15 is an elementary cross section of the tool of Figures 1 and 6 taken at 15A - 15A in Figures 1 and 6; and

Figure 16 is an elementary cross section of the tool of Figure 6 taken at 16A - 16A in Figure 6.

Figures 17 are conceptual drawings showing how the upper and lower inner sleeve portions interact with the inner sleeve to arrive at bit offset and bit point. Figure 17A shows the instant device with two eccentric sleeves; whereas, Figures 17B and 17C show the device with one concentric sleeve and one eccentric sleeve.

Figures 18 are simplified diagrams distinguishing between bit offset and bit point. Figure 18A shows bit offset and Figure 18B shows bit point. - -

In the Detailed Description of the Embodiment

At page 14, paragraph 3, please change all references to “12b” to - - 12d - -.

At page 14, paragraph 3, line 4, please add - - d - - immediately following “12”.

At page 14, paragraph 4, please change all references to “12b” to - - 12d - -.

At page 15, paragraph 1, line 2, please change the words “outer sleeve” to - - outer housing - -.

At page 15, paragraph 4, please change all references to “12b” to - - 12d - -.

At page 15, paragraph 3, line 9, please cancel the word “eccentric” and add a comma after the reference number “12”.

At page 16, paragraph 6, line 1, please cancel the word “eccentric” and add - - ,12, - - immediately following the word “sleeve”.

At page 16, paragraph 6, line 4, please cancel the word “eccentric”.

At page 17, second full paragraph, line 1, please cancel the word “eccentric”.

At page 17, third full paragraph, lines 1 and 2, please add the capital letter - - A - - immediately following “Figure 4”.

At page 17, third full paragraph, line 1, please change “ . . . line A - A’ . . . ” to - - line 4A - 4A - -.

At page 17, third full paragraph, please change all references to “12b” to - - 12d - -.

At page 18, first full paragraph, line 1, please change “4A” to - - 4B - -.

At page 18, first full paragraph, line 1, please change “ . . . line B - B’ . . . ” to - - line 4b - 4B - -.

At page 18, last full paragraph, line 1, please change “12b” to - - 12d - -.

At page 18, last full paragraph, line 3, please change the word “heavy” to - - wide - -.

At page 18, last full paragraph, line 4, please add the word - - like - - between the words “cam” and form”.

At page 18, last full paragraph, line 4, please change the second occurrence of the word “cam” to - - inner sleeve - -.

At page 19, first and second full paragraphs, please change all occurrences of the word “cam” to - - inner sleeve - -.

At page 19, first full paragraph, line 3, please the word - - relative - immediately following

the word “degrees” and please add the word - - radial – immediately preceding the word “position”.

At page 19, last full paragraph, line 2, please change “the same” to - - similar - -.

At page 20, first partial paragraph, line 1, please change “12a” to - - 12c - -.

At page 20, first partial paragraph, line 2, please add - - , 12c, - - immediately following the words “. . . upper sleeve”.

At page 20, first partial paragraph, line 3, please change “12b” to - - 12d - -.

At page 20, first partial paragraph, line 7, please cancel “12b” and “12a”.

At page 20, please substitute the following two sentences for the first two sentences in the first full paragraph:

- - The forces which are created in a “point-the-bit” scenario may differ from those [utilized] created when two eccentric [cams] sleeve portions are provided. (See Figure 1.) In a configuration comprising an eccentric [cam] sleeve portion and a concentric [inner] sleeve [section] portion, the net effect is to tilt the bit off the axis and thus give some degree of tilt to the bit cutting structure. - -

Thus the complete paragraph will read:

- - The forces which are created in a “point-the-bit” scenario may differ from those created when two eccentric sleeve portions are provided. (See Figure 1.) In a configuration comprising an eccentric sleeve portion and a concentric sleeve portion, the net effect is to tilt the bit off the axis and thus give some degree of tilt to the bit cutting structure. Such an arrangement would give considerable advantages when drilling the wellbore and may result in a cleaner profile to the wellbore, a desirable state of affairs particularly when drilling extended reach well profiles. - -

At page 20, please cancel the second full paragraph, beginning: “If the concentric sleeve section . . .” and substitute the following paragraph:

-- Figures 17A and 17C respectively shows the conceptual difference between the arrangement of the upper inner sleeve portion, 12a, and lower inner sleeve portion, 12d, (both eccentric) shown in Figure 1 and the arrangement of the upper inner sleeve portion, 12c, and the lower inner sleeve portion, 12d, shown in Figure 6 (one concentric – one eccentric). As the previous paragraph implies either one of the inner sleeve portions may be concentric or eccentric.

Figures 18 shows how the forces operate within the wellbore. Two eccentric sleeves offset the bit (Figure 18A); whereas, one eccentric sleeve and one concentric sleeve point the bit (Figure 18B).

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At page 20, last full paragraph, line 6, please change the word "sleeve" to - - housing - -.

At page 21, last full paragraph, line 1, please cancel the word "eccentric".

At page 23, second full paragraph, line 1, please change "8A" to - - 7A - -.

At page 24, first full paragraph, line 7, please cancel the word "eccentric".

At page 26, second full paragraph, line 1, please change "4" to - - 28 - -.

At page 26, third full paragraph, line 1, please add - - s - - to the word "contain".

At page 26, last full paragraph, please change all occurrences of "4" to - - 28 - -.

At page 27, fifth full paragraph, line 2, please change "4" to - - 28 - -.

At page 27, last paragraph. line 2, please change "4" to - - 30 - -.

At page 27. last paragraph, line 3, please change "6" to - -3 - -.

At page 28, first paragraph, please change "4" to - - 30 - - and please change "5" to

- - 29 - -

At page 28, fourth paragraph, line 4, please cancel of the two periods following the word "housing".

At page 28, fourth paragraph, line 6, please cancel the letter "M".

At page 29, first paragraph, please add the letter - - a - - following all occurrences of "11".

At page 29, fourth paragraph, line 2, please add - - 37 - - immediately following the word "sensor" and preceding the period.

In the claims:

Please make the following amendments to the claims:

Please cancel claims 2, 10 – 16, 33 and 35 – 46; however, Applicants retains all rights to subsequent patent applications which may form a part of divisional, continuation or continuation applications stemming from this application.

Please amend the following claims as indicated:

1. (Amended) An apparatus for selectively controlling the direction of a well bore comprising:
 - a mandrel rotatable about a rotation axis;
 - a direction controller comprising [at least two] three parts configured to apply a force to [said] the mandrel [with] having a component perpendicular to the [said] rotation axis and having a component parallel to the rotation axis wherein the mandrel freely rotates within the direction controller;
 - a housing having an eccentric longitudinal bore forming a weighted side and being configured to freely rotate under gravity about the rotation axis wherein the housing contains the direction controller; and
 - a driver for selectively varying the angle of the force relative to the weighted side of the housing about [said] the rotation axis[,], wherein the driver [being] is configured to move the [two parts] direction controller independently of [one another] the housing.
3. (Amended) The apparatus of claim 1, wherein [said at least two] the parts are configured to apply a null force to [said] the mandrel.
4. (Amended) The apparatus of claim 1, wherein the direction controller comprises a single sleeve with an eccentric bore to receive [said] the mandrel, [said] the driver being configured to selectively rotate said sleeve about the rotation axis relative to the housing.
5. (Amended) The apparatus of claim [4] 1, wherein [said sleeve] the direction controller comprises a first [part which has a] sleeve with an eccentric bore, [and] a second [part which has a] sleeve with an eccentric bore and a third sleeve extending between the sleeves.
6. (Amended) The apparatus of claim[4] 1, wherein [said sleeve] the direction controller comprises a first [part which has] sleeve with an eccentric bore [and], a second [part which has] sleeve with a concentric bore[, wherein the first and second parts are located on opposite sides of the centre line of the housing] and a third sleeve extending between the sleeves.
7. (Amended) The apparatus of claim 5, wherein the driver [means] is configured to

move [at least two parts of said] the sleeves independently of one another.

8. (Amended) The apparatus of claim [7] 6, wherein [said two parts are configurable to provide a null force on said mandrel] the driver means is configured to move the sleeves independently of one another.

17. (Amended) An apparatus for selectively controlling the direction of a wellbore[, the apparatus] comprising:

a mandrel [which is rotatably] rotatable about a rotation axis;

a direction controller comprising [at least one linear actuator] a plurality of parts configured to apply a vector force to [said] the mandrel;

a housing having an eccentric longitudinal bore forming a weighted side and being configured to freely rotate under gravity; and

[a] drive means for selectively varying the angle of the force relative to the weighted side of the housing about [said] the rotation axis the drive means being configured to move the direction controller independent of the housing, and

wherein the mandrel freely rotates within the direction controller and wherein the housing contains the direction controller.

21. (Amended) The apparatus of claim 1, wherein the driver is configured to change the direction within a tolerance [of at most] between 5°[, more preferably at most] and 1°.

22. (Amended) The apparatus of claim 1, wherein the driver comprises an [hydraulic or] electric motor[, or the like].

31. (Amended) The apparatus of claim 1, further comprising signalling means for signalling the direction of the force relative to the [heavy] weighted side of the housing.

32. (Amended) The apparatus of claim 24, wherein [said] the mandrel is connected to a drill string wherein [said] the drilling parameters include drill string rotation and [said] the logic means includes means for detecting drill string rotation wherein said drill string rotation determines when [direction] the angle of [said] the force is changed with respect to [said] the outer housing.

51. (Amended) The apparatus of claim [50] 1, wherein [the track is located on an outer

surface of said direction control means] the driver comprises a hydraulic motor.

A clean copy of the amended claims is attached to this response. Please note that in the amended claims the definite article “the” has been used rather than “said” in order to be consistent.

SUPPORT FOR AMENDMENTS

In drawings

As stated earlier, Figures 1 –14 have been corrected to comply with the Examiner’s rejections. Reference numbers have been corrected and the drawings now use a consistent series of reference numbers based on the section attached to this response and entitled “Reference/Item Number Listing.”

New Figures 15 and 16 which are cross-sections taken in Figures 1 and 6, have been added. Support for these Figures may be found in original Figures 1 and 6 submitted on June 11, 2001 which are larger and more clearer than the substitute drawings filed on October 5, 2001 to met the margin requirement. Further support for Figure 15, as used in Figure 1, may be found at paragraph 3, page 14 of the original specification. Support for Figure 15 and Figure 16, as used in Figure 6, may be found at the last paragraph on page 19 and continuing onto page 20 of the original specification.

Support for Figures 17 and 18 may be found at paragraph 2, page 20 of the original specification which discusses the differences between the “point-the-bit” scenario (one concentric sleeve and one eccentric sleeve) and the scenario when two eccentric sleeves are used. The term “bit offset” was not used in the specification, but based on the discussion it should be apparent that the bit is offset within the wellbore whenever two eccentric sleeves are used. Thus the two drawings and the term “bit offset” do NOT add new material and serve to better clarify and describe the invention.

In the specification

With one exception all the changes made in the specification are made to met the

Examiner's objections to the specification. The specification has been thoroughly edited to make certain that the terminology is clear and precise. Reference numbers have been changed and follow a consistent scheme (see the Itemized listing attached).

The description of the drawings has been amended to describe the four new Figures and as stated earlier these drawings (and hence the description) find support in the original specification.

A new paragraph has been added in place of the second full paragraph on page 20. This paragraph describes new Figures 17 and 18 in detail. However, support for this paragraph may be found in the specification and the drawings as originally submitted and happens to be the same support for the addition of new figures 17 and 18 discussed above.

In the Claims

Claim 1 has been amended to claim three parts to the direction controller as shown in the Figures as originally submitted and to add the phrase "and having a component parallel to the rotation axis." Since the original claim used the term force and stated that it had a component perpendicular to the axis of rotation, it must also have a component parallel to the axis of rotation. The addition of this language allows sense to be made of the phrase "varying the angle of the force relative to the weighted side of the housing" because force is a vector and has an associated angle. Language clearly claiming that the mandrel (to which the force is applied) rotates within the direction controller has been added. This is supported by the Figures. Similarly the language stating that the direction controller is within the housing has been added. This is clearly supported by the Figures. Finally the term "two parts" has been defined as the direction controller and the housing, which is clearly supported by the Figures. Thus, through standard vector force mathematics the angle of the force can be claimed as being relative to the weighted side of the housing.

Similarly claim 17 has been amended to remove all references to actuators but to claim the plurality of parts (sleeves) associated with the direction controller. The term "vector" has been added rather than components of force as well as language showing how all the claimed parts interact with each other. This language is supported by the drawings and the argument given above for claim 1.

The changes to claims 3 – 8 are clearly supported by the drawings as originally submitted.

Claims 21,22, 31, 32 and 51 have also been amended. The language in claim 21 has been improved to properly claim the tolerance on the direction as required by the Examiner. Claim 22 drops two alternate elements (improper claim construction) and transfers one of those elements to claim 51; thus the amendment to claim 51 is supported by original claim 22. Claim 31 properly refers to the weighted side rather than the heavy side and is supported by the specification and the claim itself. Finally claim 32 changes the word “direction” to - - the angle - - and is supported by 24 and claim 1 as originally drafted: “angle” and “direction” being synonyms with referring to force.

REQUEST FOR RECONSIDERATION OF OBJECTIONS

It is believed that the proposed corrections to the drawings and the additional drawings traverse the objections of the Examiner under points 2 through 10 of the Office Action. Reconsideration of the Examiner’s objections is respectfully requested.

It is believed that the numerous proposed corrections to the specification traverse the objections of the Examiner under points 11 and 12 of the Office Action. Reconsideration of the Examiner’s objections is respectfully requested.

Under point 13, Claim 31 has been amended to refer to the “weighted side” rather than the “heavy side.” Reconsideration of the Examiner’s objection is respectfully requested.

REQUEST FOR RECONSIDERATION OF REJECTIONS

Claim Rejections 35 USC § 112 – first paragraph

Claim 51 has been substantially amended to claim a hydraulic driver for the direction controller. Essentially an alternate embodiment element claimed in improper claim 22 has been moved to claim 51. Claim 51 no longer refers to a track portion. Reconsideration of “new” claim 51 is respectfully requested.

Claim Rejections 35 USC § 112 – second paragraph

Claims 2, 33, 35, 38 and 46 have been cancelled and are no longer under consideration in this application.

Claim 6 has been amended to properly refer back to claim 1 and claim a direction controller having a concentric and eccentric sleeve joined by a tube extending between the two sleeves. This is the configuration of Figure 6.

Claim 21 has been amended to remove the language “more preferably” and state the limitations as between 5 degrees and 1 degree.

Claim 22 has been amended by removing the term “and the like” as well as the term “hydraulic motor”. The claim as to the hydraulic motor has been moved to claim 51 (see above).

Reconsideration of claims 6, 21 and 22, as amended, is respectfully requested.

Claim Rejections 35 USC § 102

The Examiner rejected claims 1-5, 7-9, 18-20, 22-35 and 47-53 under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent 5,979,570 to McLoughlin et al. Claims 2, 33, 35 have been cancelled and claim 51 has amended to cover the subject matter transferred from claim 22 and would therefore fall under the same reason for rejection as has claim 22.

Reconsideration of the rejection of claims 1, 3-5, 7-9, 18-20, 22-32, 34 and 47-53 by the Examiner under 35 U.S.C. 102(b), as being anticipated by McLoughlin et al., is most respectfully requested for the following reasons:

1. The rejected claims have been amended to clearly distinguish the invention from that of the earlier concept of McLoughlin et al. from which the improved device evolves.
2. Figures 1 and 2 shown in the first McLoughlin disclosure, clearly illustrate a device having a single mandrel, 11, running through a single inner sleeve, 12, contained within a housing, 13, having a weighted side 20.
3. The description given in the first McLoughlin disclosure starting at column 6, lines 61 through end and continued in column 7, lines 1 through 12 disclose a different device using three elements. Nowhere does the disclosure discuss an upper portion of the inner sleeve, a lower portion of the inner sleeve or a inner sleeve that joins the upper and lower sleeve portions.

4. The Figures and the description given in the second McLoughlin disclosure (the application at bar) clearly show a direction controller comprising three parts (as opposed to the single eccentric sleeve of first McLoughlin). Under one condition the three parts of the direction controller may act like first McLoughlin, but they accomplish that purpose in a different manner.

Section 102(b) rejection - Part 1

The independent (and some dependent) claims rejected by the Examiner have been amended to more clearly and distinctly claim and point out what is regarded as the invention by Applicants. The base claim 1 and dependent claims have been amended to claim a **direction controller comprising three parts**. (The upper portion, 12a, the lower portion, 12d, and inner sleeve, 12, that joins the upper and lower portions.) Figures 1 and 6 in the disclosure show that the upper and lower portions (12a and 12d) are the only parts of the direction controller that are in contact with the outer housing, 13. In the original McLoughlin device the direction controller (essentially item 12) was in contact with the outer housing, 13, throughout the length of the outer housing. Therefore there is a substantial mechanical difference between the two McLoughlin devices.

Figures 17 and 18, which are based on the original disclosure as filed in June 2001, more clearly illustrate the mechanical difference between the two devices. Figure 17C is a conceptual diagram of the device of Figure 1. That is the upper and lower portions of the direction controller are eccentric sleeves. This results in bit direction control that is based on offsetting the drill string within the wellbore as shown in Figure 18. This is exactly the same result as the first McLoughlin device, but the result is accomplished in a different mechanical manner.

Figure 17B is a conceptual diagram of the device of Figure 6. That is the upper portion is concentric and the lower portion is eccentric. This results in bit direction control that is based on bit point as shown in Figure 18A. In a similar manner the two portion may be reversed as shown in Figure 17A; however, this still result in bit point. The first McLoughlin device CANNOT accomplish this function. Thus the instant device is clearly different.

Bit Point and Bit Push have different advantages in different drilling conditions. Thus the instant device can duplicate (in a different manner) the original bit push operation of the first McLoughlin device and can be reconfigured in the filed to provide bit point. Again the original McLoughlin device could NOT accomplish these two functions in ONE tool.

Claim 17 has been amended to no longer claim linear actuators (due to the restriction) but now claims a plurality of sleeves to form the direction controller.

Both claims 1 and 17 now properly place the elements of the device so that the connection between the elements may be understood. That is "the mandrel (items 11b, 11a and 11c) rotates freely within the direction controller" and "the housing restrains the direction controller."

Further, these claims have been amended to correct a potential section 112 rejection by adding proper antecedent basis and clearly stating which parts (namely the direction controller and the housing) are independently driven by the driver.

Amended dependent claim 3 applies a null force to the mandrel. This would obviously be accomplished by using two concentric sleeves. The original McLoughlin device CANNOT accomplish this continuous result.

Amended Claim 4 uses a single sleeve in the instant tool.

Amended Claims 5 and 6 go to bit push and bit point respectively; whereas, amended claims 7 and 8 claim independent movement of the sleeves of claims 5 and 6

Amended claim 21 now includes the limitations of a three part direction controller and claims the tolerance of control of the force angle as being between 5 degrees and 1 degree. (This claim was originally approved by the Examiner providing limiting language were included.)

Amended claim 22 goes to an electric driver for the direction controller and depended on amended claim 1.

Amended claim 31 claims a signaling mechanism used in the new directional drilling tool and included the limitations of the three part direction controller.

Amended claim 32 has been corrected to claim control of the direction of the applied and includes all the limitations of the three part direction controller.

Finally amended claim 51 no longer claims a track but now claims a hydraulic drive means for the direction controller and includes all the limitations of the three part direction controller.

Un-amended claims 18-20, 23-30, 47-50 and 52-53 were also rejected by the Examiner as being anticipated by the first McLoughlin device. These claims depend from claims 1 or 17 and thus now include all the limitations of the three part direction controller.

Section 102(b) rejection - Part 2

The Examiner rejected claims 1, 3-4, 7-8 and 30 stating that first McLoughlin disclosed an apparatus 10 for selectively controlling the direction of a wellbore 2 comprising a mandrel 11 capable of passing well bore fluids, and rotatable about a rotation axis; *a direction controller 10* (emphasis added) comprising at least two parts 12, 13, configured to apply a force to said mandrel with a component perpendicular to said rotation axis; a housing 13 having an eccentric longitudinal bore forming a weighted side 20 and configured to freely rotate under gravity; and a driver 26, 27, for selectively varying the angle of force relative to the weighted side 20 of the housing 13 about said rotation axis, the driver 26, 27, being configured to move the two parts 12, 13, independently of one another. The Examiner added that the two parts 12, 13 were configured to apply a null force to said mandrel 11.

There is no direction controller *per se* in first McLoughlin. The Examiner has referred to the WHOLE first McLoughlin device as the direction controller (see emphasis above), and certainly the whole first McLoughlin device has at least two parts. The equivalent “direction controller” in first McLoughlin is the inner eccentric sleeve 12 which has ONE part only. As stated above the direction controller of second McLoughlin has at least three parts – the upper eccentric (or concentric) sleeve, the lower eccentric (or concentric) sleeve and the inner concentric sleeve. Thus, it takes a minimum of three parts to perform the function of the inner ECCENTRIC sleeve of first McLoughlin which may be referred to as “BIT PUSH.”

With all due respect to the Examiner, in first McLoughlin parts 12 (inner ECCENTRIC SLEEVE) and 13 (WEIGHTED HOUSING) are incapable of applying a null force to the mandrel. The mere fact that the inner sleeve is ECCENTRIC (see first McLoughlin column 6, lines 66-67) will place a FORCE onto the mandrel being transfer from/to the weighted housing. There is no technique or method by which first McLoughlin can be configured to place a null force on the mandrel. (The laws of physics apply, rotate something in an eccentric sleeve and

there will be a force!) The only way second McLoughlin can be configured to apply a null force to the mandrel is by placing two concentric sleeves at either end of the inner sleeve. This may be useful if the second McLoughlin tool is performing another function or is part of an MWD system and the operator wishes to have the tool in the wellbore, but in non-functioning condition.

As stated in part 1, the second McLoughlin tool is capable of BIT PUSH and BIT POINT by exchanging one of the upper or lower inner sleeves with a concentric sleeve (not both – just one). First McLoughlin is not capable of BIT POINT.

Amended claims 1, 3-4 and 7-8 certainly now clearly define second McLoughlin and claim 30 is a limitation on claim 1. Thus, claims 1, 3-4, 7-8 and 30 clearly go to another device: second McLoughlin. A Court may decide that second McLoughlin when configured as a BIT PUSH controller infringes the claims of first McLoughlin under the Doctrine of Equivalents, but the two devices are different and are therefore separately patentable.

Section 102(b) rejection - Part 3

The Examiner rejected claims 5 and 9 stating that that, the disclosed sleeve 12 *comprises a first part, which has an eccentric bore, and a second part that has an eccentric bore*. (Emphasis added.) The Examiner noted that the sleeve 12 was located at least partially within the eccentric bore of the housing 13. With all due respect to the Examiner, close examination of first McLoughlin Figure 9 clearly shows that the disclosed sleeve has only ONE part and Figure 4 shows that the ONE part is eccentric. In second McLoughlin the sleeve has at least three parts – the portion of the sleeve between the upper and lower sleeves is concentric; whereas the upper and lower sleeves may be configured as concentric-concentric (null), eccentric-eccentric (BIT PUSH), concentric-eccentric or eccentric-concentric (both being BIT POINT).

Amended claim 5 goes to the eccentric-eccentric configuration and clearly defines second McLoughlin. Claim 9 is a limitation on claim 1. Thus, claims 5 and 9 clearly go to another device: second McLoughlin. A Court may decide that second McLoughlin when configured as a BIT PUSH controller, under claims 5 and 9, infringes the claims of first McLoughlin under the Doctrine of Equivalents, but the two devices are different and are therefore separately patentable.

Section 102(b) rejection - Part 4

The Examiner rejected claim 6 stating that the sleeve comprised a first part 12, which has an eccentric bore, and a second part 11, which has a concentric bore. The Examiner noted that, "because of the undefined nature of the term "centerline" as used in this claim, the term is read very broadly . . ." Again with all due respect to the Examiner the sleeve parts 12a, 12b, etc. are NOT connected to the mandrel parts 11a, 11b, etc. Applicant agrees that original claim 6 was poorly drafted and claim 6 has been amended to clearly claim the concentric-eccentric configuration (bit point) of second McLoughlin and thus clearly defines a different device.

Section 102(b) rejection – Part 5

The Examiner rejected claims 18-20 stating that, the device includes two stabilizer shoes 21, located on the outside of the housing 13, and that the stabilizer shoes 21 are offset by a predetermined amount in relation to the weight of the housing 13. Un-amended claims 18 –20 are limitations on claim 1, which has been clearly been amended to define the second McLoughlin device and are thus legitimate limitations on a distinctly patentable device.

Section 102(b) rejection – Part 6

The Examiner rejected claim 22 stating that, the driver 26, 27, comprised a hydraulic or electric motor 26, as described in [first McLoughlin] column 8, lines 50-60, which has been clearly been amended to define the second McLoughlin device and is thus a legitimate limitation on a distinctly patentable device.

Section 102(b) rejection – Part 7

The Examiner rejected claims 23-29, and 31-33 stating that, in column 10, lines 54 to 70, and column 11, lines 1-52, [first] McLoughlin described a logic means and technique to signal the surface as to the position of the eccentric sleeve. The sensor signal is decoded at the surface and the logic means sends signals via mud pulses or electrical signals back down to a logic means associated with the direction controller 10, where the logic means decodes the signals and responds as appropriate. Specifically lines 48-52 indicate that the logic means may be an integral

part of the direction controller 10, or may be located completely separate from the direction controller 10. Furthermore, an energy source or power pack for supplying the logic circuits can be located within the tool.

The Examiner is quite correct that the a sensor is employed in first McLoughlin; however, with all due respect to the Examiner that sensor defines the internal position of the eccentric sleeve, 12, ONLY. The second part of first McLoughlin column 10 through the majority of column 11 describe techniques for monitoring and controlling the state of the inner eccentric sleeve (BIT PUSH). Claims 23 – 29 and 32 go to drilling parameters – such as rpm (see claim 32), a gamma ray sensor (see page 29 last paragraph). Furthermore, the term drilling parameter in the drilling industry includes all MWD type information (inclination, deviation, weight on bit, etc.) Thus un-amended claims 23 – 29 and 32 are limitations on claim 1, which has been clearly been amended to define the second McLoughlin device and are thus legitimate limitations on a distinctly patentable device.

Section 102(b) rejection – Part 8

The Examiner rejected claim 34 (claim 35 has been cancelled) stating that at [first McLoughlin] column 11, the Examiner stated that, lines 32 to 45, described an apparatus 10 wherein a mandrel 11 is connected to a drill string 9 wherein drilling parameters include drill pipe 9 rotation and the logic means includes a means for detecting drill string 9 rotation and determining a time period between rotation and non-rotation wherein the time period determines when the angle of force should be changed with respect to the weighted side 20 of the housing 3. Again claim 34 depends from claim 1 which has been amended to clearly define second McLoughlin and thus claim 34 is a legitimate limitation on a patentable device.

Section 102(b) rejection – Part 9

The Examiner rejected claims 47-53 (claim 51 has been dramatically amended) stating that Figure 8 [of first McLoughlin] discloses a drive wheel 26 and track 25, 27, said drive wheel engagable with said track 25, 27, such that movement of the drive wheel 26, causes movement of said track 25, 27, relative to said drive wheel 26. The drive wheel, when stationary, prevents

movement between the track 25,27, and drive wheel 26, the drive wheel 26, and track 25,27, being located such that movement of the drive wheel 126, effects relative movement between the force and weighted side 20 of the housing 13. The track 25, 27, is located on the inner surface of the housing 13, *which is part of the directional controller 12, 13.* (Emphasis added.) The drive wheel 26, comprises a plurality of teeth, which interlock with the teeth on the track 25, 27. The direction of force is changed in response to the rotation of the drive wheel 26.

With all due respect to the Examiner, the directional controller of second McLoughlin is the three part sleeve -- 12a, (12b), 12c or 12d being the upper and lower sleeve portions joined by the inner CONCENTRIC sleeve 12. Thus un-amended claims 47-50 and 52-53 (claim 51 has been dramatically amended and addressed earlier) go to a completely different device in second McLoughlin over the device of first McLoughlin.

Conclusion

Applicants believe that they have shown that the new (second) McLoughlin device differs substantially in concept, apparatus and technique from the old (first) McLoughlin device. The major difference being that the instant device uses three elements in the direction controller; whereas, the McLoughlin device uses one element. This difference produces two different techniques for direction control – BIT POINT and BIT OFFSET. The original McLoughlin device was capable of BIT OFFSET but is not capable of BIT POINT. Thus there are substantial patentable differences between the two device.

Therefore, in light of the arguments above and in light of the amendments to the rejected claims, Applicants respectfully request that the Examiner reconsider his rejection and allow the claims.

Applicants apologize to the Examiner for the state of the drawings submitted in the original application. The quality of the drawings would readily lead to a misunderstanding of the underlying principal behind second McLoughlin. Has the drawings been more consistent and had the specification been consistent the examination would have been much easier.

Applicants submit as an attachment, a reference listing showing all reference numbers used in the amended drawings and amended specification. The list adds NO new material and serves

only to distinguish the invention and set up the climate for properly describing the concept. Support for the reference listing may be found in the original specification and the drawings.

Claim Rejections 35 USC § 103

The Examiner rejected claims 38-46 under 35 U.S.C. 103(a) as being unpatentable over McLoughlin et al. in view of U.S. Patent 5,439,064 to Patton. In light of the fact that these claims have been cancelled with the reservation to pursue Applicants' rights in further applications, any discussion of these claims is moot.

ALLOWABLE SUBJECT MATTER

The Examiner stated that claim 21 would be allowed if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph. In making his statement the Examiner further stated that this claim should include all the limitations of the base claim and any intervening claims. The amendments offered earlier in this response correct the antecedent problems and add limiting language to the base claims. It is believed that this claim is now allowable for the reasons discussed above in the section under 35 U.S.C. § 102(b).

GENERAL REMARKS

The above amendments to the drawings, the specification and the claims add NO new material. Support for the amendment may be found in the specification, drawings and claims as originally filed.

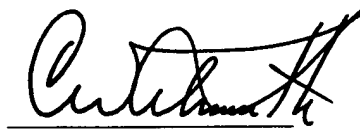
Applicants believe that they have properly traversed the rejections and objections of the Examiner and that they have presented a proper and respectful request for reconsideration of the rejected claims. Acceptance and entry of the amendments is respectfully requested.

As stated earlier the definite article "the" rather than "said" has been used throughout the amended claims in order to be consistent. "Said" still appears in a number of non-amended claims. Applicants have edited the specification and added drawings and limited text (supported

by the original specification so that NO new material was added) in order to make the specification read more clearly and support the claims. Applicants apologize, once again, to the Commissioner and the Examiner for the state of the original specification at time of filing. The understanding of the Commissioner and Examiner are respectfully requested.

Applicants now believe that the application is in condition for allowance and such is respectfully requested. There are no additional fees due other than the petition fee for a two month extension.

Respectfully submitted



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Attachments

- Reference/Item Number Listing
- Clean Copy of Claim Amendments
- Petition for Extension of Time (2 months) to Respond
- Firm's Check in payment of the Petition Fee
- Proposed Drawings

CERTIFICATE OF EXPRESS MAILING UNDER 37 CFR 1.10(a)

I, C. W. Alworth, hereby certify that this Response to the First Office action in the above identified patent application, and the attachments, was properly placed (prepaid) in the Express Mail Service of the United States Postal Service – receipt number EV 247724339 US - on the 27th day of May, 2003. Under the Rules of the Office, the Commissioner is hereby requested to assign the date of filing as the date of Express Mailing – namely 27 May 2003.

EV247724339US


C. W. Alworth

ATTACHMENTS

Reference/Item Number Listing

Provided as an aid to Examination and not as part of the application

- 1
- 2 Wellbore
- 2a Low Side
- 3 Adapter Sub
- 4 Drill String/Adapter Sub
- 5 Lines of Flux
- 6 Instrumentation and Battery Subassemblies
- 7 Drill Bit
- 8 Drill Collars
- 9 Drill String
- 10 In general the Instant Device
- 11a Center Mandrel |
- 11b Upper Mandrel | all join together see ¶5 of page 13 of the original PCT application
- 11c Lower Mandrel |
- 12 Inner Sleeve
- 12a Upper Inner Sleeve Portion - Eccentric
- 12b Lower Inner Sleeve Portion - Concentric
- 12c Upper Inner Sleeve Portion - Concentric
- 12d Lower Inner Sleeve Portion - Eccentric
- 13 Outer Housing – Pregnant Housing – Outer (Eccentric) Sleeve
- 14 Secondary Shoes
- 15 Fluid Bypass Outer Housing
- 16 Fluid Bypass Inner Sleeve
- 17 Fluid Bypass, Mandrel
- 18 Fluid Interface Between Inner Sleeve and Outer Housing
- 19 Fluid Interface Between Mandrel and Inner Sleeve
- 20 Weighted or Pregnant Portion of the Outer Housing
- 21 Stabilizer Shoe
- 22 String Stabilizer placed away from the instant device
- 23 String Stabilizer placed close to the instant device
- 24 Near-bit Stabilizer
- 25 Pinion Gear
- 26 Ring Gear
- 27 Outer Housing Cavity
- 28 Magnet
- 29 Surveying Tools
- 30 Crossover sub
- 31 Linear Actuator
- 32
- 33 Linear Actuator
- 34
- 35 Linear Actuator
- 36
- 37 Sensor

CLEAN COPY OF AMENDED CLAIMS

1. (Amended) An apparatus for selectively controlling the direction of a well bore comprising:
 - a mandrel rotatable about a rotation axis;
 - a direction controller comprising three parts configured to apply a force to the mandrel having a component perpendicular to the rotation axis and having a component parallel to the rotation axis wherein the mandrel freely rotates within the direction controller;
 - a housing having an eccentric longitudinal bore forming a weighted side and being configured to freely rotate under gravity about the rotation axis wherein the housing contains the direction controller; and
 - a driver for selectively varying the angle of the force relative to the weighted side of the housing about the rotation axis wherein the driver is configured to move the direction controller independently of the housing.
3. (Amended) The apparatus of claim 1, wherein the parts are configured to apply a null force to the mandrel.
4. (Amended) The apparatus of claim 1, wherein the direction controller comprises a single sleeve with an eccentric bore to receive the mandrel, the driver being configured to selectively rotate said sleeve about the rotation axis relative to the housing.
5. (Amended) The apparatus of claim 1, wherein the direction controller comprises a first sleeve with an eccentric bore, a second sleeve with an eccentric bore and a third sleeve extending between the sleeves.
6. (Amended) The apparatus of claim 1, wherein the direction controller comprises a first sleeve with an eccentric bore, a second sleeve with a concentric bore and a third

sleeve extending between the sleeves.

7. (Amended) The apparatus of claim 5, wherein the driver is configured to move the sleeves independently of one another.

8. (Amended) The apparatus of claim 6, wherein the driver means is configured to move the sleeves independently of one another.

17. (Amended) An apparatus for selectively controlling the direction of a wellbore comprising:

- a mandrel rotatable about a rotation axis;

- a direction controller comprising a plurality of parts configured to apply a vector force to the mandrel;

- a housing having an eccentric longitudinal bore forming a weighted side and being configured to freely rotate under gravity; and

- drive means for selectively varying the angle of the force relative to the weighted side of the housing about the rotation axis the drive means being configured to move the direction controller independent of the housing, and

- wherein the mandrel freely rotates within the direction controller and wherein the housing contains the direction controller.

21. (Amended) The apparatus of claim 1, wherein the driver is configured to change the direction within a tolerance between 5° and 1°.

22. (Amended) The apparatus of claim 1, wherein the driver comprises an electric motor.

31. (Amended) The apparatus of claim 1, further comprising signalling means for signalling the direction of the force relative to the weighted side of the housing.

32. (Amended) The apparatus of claim 24, wherein the mandrel is connected to a drill string wherein the drilling parameters include drill string rotation and the logic means includes means for detecting drill string rotation wherein said drill string rotation determines when the angle of the force is changed with respect to the outer housing.

51. (Amended) The apparatus of claim 1, wherein the driver comprises a hydraulic motor.